Bonneville Power Administration
Fish and Wildlife Program FY99 Proposal

Section 1. General administrative information

Operate and Maintain Umatilla Hatchery Satellite Facilities

Bonneville project number, if an ongoing project 8343500

Business name of agency, institution or organization requesting funding

Confederated Tribes of the Umatilla Indian Reservation

Business acronym (if appropriate) CTUIR

Proposal contact person or principal investigator:

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Subcontractors.

Organization	Mailing Address	City, ST Zip	Contact Name

NPPC Program Measure Number(s) which this project addresses.

7.41.1, 7.41.2

NMFS Biological Opinion Number(s) which this project addresses.

NMFS Hatchery Operations Biological Opinion - Section IV.C.3.b. While not specifically identified, the project provides for acclimation of juvenile fall chinook salmon in the Umatilla Basin which is identified by NMFS as a required measure to reduce straying of Umatilla fall chinook.

Other planning document references.

Wy Kan Ush Me Wa Kush Wit - Volume II. Subbasin Plans - Umatilla River.

Umatilla Fisheries Restoration Plan - Present and Proposed Flow Enhancement and Fishery Rehabilitation Projects and Costs

Umatilla Subbasin Plan - Section IV. Anadromous Fish Production Plans

Umatilla Hatchery Master Plan - Executive Summary, Production Profile, and Facilities Needed to Implement Program

Draft Umatilla Hatchery Supplemental Master Plan - Section VI. Facilities Needed to Implement Plan

Umatilla Hatchery and Basin Annual Operation Plan - Sections II through VII.

Subbasin.

Umatilla, Walla Walla

Short description.

Acclimate juvenile salmon and steelhead prior to release into the Umatilla River Basin. Collect, hold and spawn summer steelhead, coho and chinook salmon and provide eggs to ODFW and other hatcheries for incubation, rearing and later
release into the Umatilla Basin.

Section 2. Key words

X	Anadromous fish		Construction		Watershed
	Resident fish	*	O & M	*	Biodiversity/genetics
	Wildlife	X	Production	*	Population dynamics
	Oceans/estuaries		Research		Ecosystems
	Climate		Monitoring/eval.		Flow/survival
	Other		Resource mgmt	*	Fish disease
			Planning/admin.	X	Supplementation
			Enforcement		Wildlife habitat en-
			Acquisitions		hancement/restoration

Other keywords.

acclimation, imprinting, spawning, outmigration, survival, contribution, escapement, sampling, monitoring, data collection, data analysis, coded-wire tag data, homing, coordination, operations, maintenance

Section 3. Relationships to other Bonneville projects

Project #	Project title/description	Nature of relationship

8403300	Umatilla Hatchery O & M	Umatilla Hatchery is the primary production facility for providing juvenile salmon and steehead smolts for acclimation and release into the Umatilla River Basin.
8802200	Umatilla and Walla Walla Basins Trap and Haul Program	The trap and haul program provides adult recovery information and broodstock for spawning. They also trap and haul outmigrating hatchery produced juveniles during low water conditions.
8805302	NEOH Hatchery - Umatilla/Walla Walla Component - Planning, Siting, Design and Construction	This project provides for design and construction of new artificial production facilities which will be operated under project no. 8343500 when completed.
9000501	Umatilla and Walla Walla Basins Natural Production M & E	The UWWBNPM&E project provides biological information related to the outcome of the production goals.
8710001	Umatilla River Basin Anadromous Fish Habitat Enhancement	The URBAFH&E project provides increased habitat for fish utilization.
9000500	Umatilla Hatchery M & E	The UHM&E project provides biological information related to the operation of the satellite facilities and evaluates the success of the artificial production program.
8902401	Umatilla River WEID/Screens M & E	The Umatilla River WEID/Screens M&E project privides biological information related to the operation of the production program.
8343600	Umatilla Passage Facilities O & M	The UPFO&M assists in preventative and heavy maintenance at all satellite facilities.
	Little White Salmon Hatchery O & M	LWSH provides fall and spring chinook salmon smolts for acclimation and release into the Umatilla River Basin

Section 4. Objectives, tasks and schedules

Obj 1,2,3	Objective	Task a,b,c	Task

1	Hold groups of juvenile salmonids at acclimation facilities before release into the Umatilla River Basin	a.	Hold and feed juvenile salmon and steehead in facilities prior to release into the Umatilla River Basin
		b.	Monitor temperature and D.O. daily during acclimation
2	Determine species composition and numbers of juveniles trapped at the Westland Canal juvenile facility	a.	Collect species composition, marks, size and numbers of fish trapped at the Westland Canal juvenile facility during trapping operations
		b.	Compare information collected at the traps with pre-release data to give an indication of outmigration timing
3	Provide summer steelhead, spring and fall chinook and coho salmon eggs to Umatilla and other hatcheries for incubation, rearing and later release into the Umatilla River Basin	a.	Collect, hold and spawn summer steelhead, spring and fall chinook and coho salmon as well as collect physical data
		b.	Assist ODFW in collecting samples from broodstock for disease analysis
4	Determine total survival, contribution to ocean and Columbia River fisheries and escapement to the Umatilla River and other terminal areas of all coded-wire tagged groups released into the Umatilla River Basin	a.	Collect snouts and physical data from coded-wire tagged fish at the satellite facilities. Receive snouts and data that may be collected from surveys conducted by other programs. Deliver the snouts and data to ODFW for retrieval and decoding
		b.	Determine survival, contribution and escapement rates by collecting and expanding data from Pacific States Marine Fisheries Commission and other appropriate sources
5	Maintain the facilities in good working order	a.	In cooperation with UPFO&M, repair, maintain and service all equipment, buildings and grounds
6	Participate in planning and review process for new hatchery	a.	Review and comment on engineering designs and follow up

	facilities scheduled for completion in the Walla Walla River Basin		with engineers as neccessary during planning of new facilities
7	Disseminate information associated with above tasks	a.	Write and submit quarterly reports and an anual report to BPA summarizing operation and maintenance of all satellite facilities

Objective schedules and costs

Objective #	Start Date mm/yyyy	End Date mm/yyyy	Cost %
1	01/1999	05/199	30
2	03/1999	07/1999	5
3	01/1999	12/1999	25
4	01/1999	12/1999	5
5	01/1999	12/1999	20
6	01/1999	12/1999	5
7	01/1999	12/1999	10

Schedule constraints.

None identified.

Completion date.

This is an ongoing project. Costs will continue for O & M.

Section 5. Budget

Item	Note	FY99
Personnel		$274,023
Fringe benefits	28%	$76,727
Supplies, materials, non-expendable property		$55,720
Operations & maintenance		$149,410
Capital acquisitions or improvements (e.g. land, buildings, major equip.)		
PIT tags	# of tags:	
Travel		$30,270

Indirect costs	34%	$199,291
Subcontracts		
Other		
TOTAL		$785,441

Outyear costs

Outyear costs	**FY2000**	**FY01**	**FY02**	**FY03**
Total budget	$1,287,000	$1,341,000	$1,423,000	$1,488,000
O&M as % of total	100	100	100	100

Section 6. Abstract

In the early 1980's, CTUIR and ODFW began implementing a comprehensive plan to supplement steelhead and re-establish salmon runs in the Umatilla River Basin. Artificial production, including the need for Umatilla Hatchery and associated satellite facilities, was identified as a key component in this effort.

This project provides for the operation and maintenance of the satellite facilities. The goals and objectives are to acclimate juvenile salmon and steelhead prior to release into the Umatilla River Basin and to provide salmon and steelhead eggs necessary to meet the Umatilla Basin artificial production goals.

The reduced stress and increased imprintation of juvenile salmon and steelhead released from acclimation ponds into the Umatilla Basin will increase smolt to adult survival back to the Columbia and Umatilla Rivers which specifically addresses the Columbia Basin Fish and Wildlife Program by contributing to increased adult returns to the Columbia Basin. Acclimation also imprints fish back to natural production areas.

Results of the project are monitored and evaluated as part of the Umatilla Hatchery and Natural Production Monitoring and Evaluation Programs. Data collected by this project is shared with the Monitoring and Evaluation Programs and is also summarized in an annual report to BPA. The information is analyzed by CTUIR and ODFW managers and researchers, and each year, adaptive
management decisions are made and incorporated into the Umatilla Hatchery and Basin Operation Plan.

Section 7. Project description

a. Technical and/or scientific background.

Runs of coho, fall and spring chinook salmon, once abundant in the Umatilla River, were essentially eliminated in the early 1900's. Losses have generally been attributed to the development of hydroelectric dams and to forestry, agriculture and irrigation practices.

The single indigenous naturally spawning stock left in the basin is a run of approximately 700 to 2,300 summer steelhead.

In the early 1980's, CTUIR and ODFW began implementing a comprehensive plan to supplement steelhead and re-establish salmon runs in the Umatilla River Basin to partially mitigate for these losses. Recognizing that it would take years of intensive reintroduction and supplementation with hatchery fish to achieve natural and hatchery production goals, the highest priority was placed on the implementation of a hatchery program including construction of a major hatchery and associated satellite facilities. In 1982, the NPPC adopted Measure 704 (i) (1) to construct juvenile release and adult collection facilities on the Umatilla Indian Reservation. In 1984, the measure was amended to include construction of a hatchery to produce 200,000 summer steehead. In 1986, the measure was amended again to authorize construction of a facility capable of producing 160,000 pounds of salmon and seelhead, and finally, in 1987, the measure, now 703 (f) (1) (a) was again amended to allow an increase in production to 290,000 pounds. Prior to construction of the hatchery, however, the measure required a facility Master Plan be approved by the Council. The Umatilla Hatchery Master Plan was prepared by CTUIR and ODFW in cooperation with the Columbia River Intertribal Fish Commission (CRITFC), NPPC and BPA. The Plan was approved in 1989 (ODFW and CTUIR 1989).

Umatilla Hatchery satellite facilities are an integral part of this program. They specifically address juvenile acclimation/release and adult broodstock holding/spawning needs which are essential to achieving the overall Umatilla Basin natural and hatchery production goals. The facilities allow fish managers to: 1) hold and spawn adult salmon and steelhead from Umatilla River broodstock and provide eggs for the Umatilla River production program, 2) acclimate/imprint smolts for increased survival and homing, and 3) release juveniles in targeted areas for re-establishment of natural production.

The increased survival from acclimation directly addresses the NPPC's rebuilding goal by contributing to increased adult returns to the Columbia River Basin. In addition, increased imprintation and homing from acclimation facilities located high in the basin address the needs identified by NMFS in their Hatchery Biological Opinion.

b. Proposal objectives.

The following project objectives for 1999 are part of overall objectives to operate and maintain the satellite facilities:

Objective 1: Hold groups of juvenile salmonids at acclimation facilities prior to release into the Umatilla River Basin. Approximately 150,000 summer steelhead, 1.5 million coho, 480,000 fall chinook yearlings, 2.682 million fall chinook subyearlings and 810,000 spring chinook yearlings will be acclimated and released in 1999. The Umatilla fish restoration program was designed to increase adult returns to the Columbia River by

91,000 fish, which directly addresses the NPPC's goal to increase adult returns to the Columbia River. Total adult salmon and steelhead return goals to the Umatilla Basin are approximately 48,000 fish. The Umatilla Hatchery Master Plan identifies adult return goals to the Umatilla Basin for each target species.

Objective 2: Determine general trends in juvenile outmigration timing. During low water conditions, juvenile salmonids are trapped at the Westland Canal juvenile facility and hauled to the mouth of the Umatilla River by the Umatilla and Walla Walla Basins Trap and Haul Program. During the trapping period, juveniles will be sampled and the data will be compared to data taken at release to give an indication of outmigration timing for different release groups. The information will help managers determine which release strategies are most effective.

Objective 3: Provide summer steelhead, coho, fall and spring chinook salmon eggs to ODFW and other hatcheries for incubation, rearing and later release into the Umatilla River Basin. Approximately 227,000 summer steehead eggs will be taken and transported to Umatilla Hatchery. The number of spring chinook eggs to be taken will be determined in mid-1998 and incorporated into the 1998-1999 Umatilla Hatchery and Basin Annual Operation Plan. The number of coho and fall chinook eggs to be taken will be determined in mid-1999 and incorporated into the 1999-2000 Umatilla Hatchery and Basin Annual Operation Plan. This objective contributes to the NPPC goal of maintaining biological diversity among anadromous fish populations.

Objective 4: Determine total survival, contribution to ocean and Columbia River fisheries and escapement to the Umatilla River and other terminal areas of all coded-wire tagged groups released into the Umatilla River Basin. The information will help managers determine which rearing and release strategies are most effective.

Objective 5: Maintain the facilities in good working order. Proper maintenance will allow the facilities to be operated efficiently to maximize juvenile survival.

Objective 6: Participate in planning, design, and review process for new NEOH facilities scheduled for completion in the Walla Walla River Basin. This will help to ensure that facility needs and various details are addressed.

Objective 7: Disseminate information associated with the completion of above tasks. Quarterly reports are written and an annual report is submitted to BPA.

c. Rationale and significance to Regional Programs.

This project is an essential part of a comprehensive Umatilla River fish restoration plan developed by CTUIR and ODFW in cooperation with the Council, BPA, NMFS, various Irrigation Distrticts and private landowners. The project helps to increase smolt to adult survival and provide eggs for the program and directly increases survival of salmon and steelhead to the upper Columbia River Basin which is consistent with the Council's Fish

and Wildlife Program, U.S. vs. OR Columbia River Fisheries Management Plan and the Pacific Salmon Treaty.

As a co-manager, CTUIR operates the Umatilla Hatchery satellite facilities in cooperation with ODFW as part of the Umatilla River Basin artificial production program. Other facility operations to complete the program include Umatilla, Bonneville, Little White Salmon, Cascade and Carson National Fish hatcheries operated by ODFW and USFWS. Other projects include new ladders and screens to improve fish passage and habitat and flow enhancement funded by the Bureau of Reclamation and BPA. The Umatilla Passage Facilities O & M project also assists in preventative and heavy maintenance at all satellite facilities.

d. Project history

The Bonifer acclimation facility was the first facility of its kind completed by the NPPC's Fish and Wildlife Program. The facility was constructed in the fall of 1983 and began operations in 1984. In 1984 and 1985, the facility was operated under project number 82-18 and the title was "Operation and Maintenance of the Bonifer Springs Juvenile Acclimation and Adult Holding Facility". Minthorn Springs was completed in late 1985 and began operations in 1986. In 1986, both facilities were operated under project number 83-435 and the title of the project was changed to "Minthorn Springs Creek Summer Juvenile Release and Adult Collection Facility". In 1991, Umatilla Hatchery began operations, and in 1994 and 1995, respectively, Imeques C-mem-ini-kem and Thornhollow acclimation and release facilities were built. In 1995, the project title was changed to "Umatilla Hatchery Satellite Facilities Operation and Maintenance" but the project number remained the same. In 1996 and 1997, adult holding and spawning facilities were built on the Umatilla and Walla Walla Rivers. One additional acclimation and release facility and one hatchery facility are scheduled for completion in 1998 and 1999, respectively.

Salmon runs were extinct in the Umatilla River Basin prior to implementation of the Umatilla River fish restoration program. This plan, of which the satellite facilities are a key component, has resulted in thousands of fish being caught in ocean and Columbia River sport and commercial fisheries and in annual returns of salmon and steelhead to the Umatilla River of 4,000 to 8,000 adults in the last 10 years. Since the satellite facilities have been in operation, approximately 15.8 million summer steelhead, coho and fall and spring chinook salmon juveniles have been acclimated and released. The number of fish acclimated annually has risen from 20,000 in 1983 to over 5.6 million projected releases in 1999. In addition, approximatley 2,100 broodstock have been collected and held for spawning and approximately 8.45 million eggs have been taken and transported to ODFW hatcheries for incubation, rearing and later release back into the Umatilla Basin.

Quarterly reports and an annual report to BPA provide information on juvenile acclimation, adult holding and spawning, juvenile and adult physical health, juvenile

outmigration, maintenance and repair of facilities and adult survival and contributions. Annual reports are available for each year since project inception.

Data collected by this project and is shared with the Umatilla Hatchery and Natural Production Monitoring and Evaluation Programs and is analyzed by CTUIR and ODFW managers and researchers. Based on information provided, adaptive management decisions are made each year by basin co-managers. These decisions are incorporated into the Umatilla Hatchery and Basin Annual Operation Plan.
The project cost has averaged $222,734 annually over the past 12 years. The maximum cost is anticipated to be $507,827 in FY 1998.

e. Methods.

Objective 1: Juvenile salmon and steelhead will be tranported by ODFW to the acclimation facilities from ODFW and USFWS hatcheries. Proposed acclimation periods are two weeks for fall chinook subyearlings and four weeks for steelhead, coho, and fall and spring chinook yearlings. The fish will be fed Biomoist feed twice each day at a proposed rate of 1% BWD for yearlings and 1.5% BWD for subyearlings. Mortalities will be removed daily. ODFW pathology personnel will be available to address specific disease problems should they occur and they will routinely sample each release group and test for selected pathogens. ODFW research personnel will sample the fish the day of release for size and descaling. Water temperature and dissolved oxygen measurements will be taken daily during acclimation. The critical assumption is that juvenile acclimation will increase overall survival and homing to the Umatilla River.

Objective 2: During low water conditions, juvenile salmonids are trapped at the Westland Canal juvenile facility and hauled to the mouth of the Umatilla River by the Umatilla and Walla Walla Basins Trap and Haul Program. During the trapping period, juveniles will be sampled one to three times per week for size, species composition and marks. Weight samples will be taken using standard hatchery practices to estimate the average size of the fish. The weight samples will be used to estimate the total number of fish hauled on sample days by multiplying the number of fish per pound by the number of pounds loaded. This data is compared to data taken at release to give an indication of outmigration timing.

Objective 3: In cooperation with CTUIR and ODFW trap and haul personnel, adult steelhead will be collected at Three Mile Dam on the Umatilla River and transported to Minthorn for holding and spawning. To help maintain the genetic integrity of the hatchery population, the first priority for broodstock will be to collect unmarked fish at a female to male ratio of 1:1 and at a rate of 10% of the unmarked run by month. To ensure meeting the broodstock goal, coded-wire tagged hatchery fish may also be collected. Fall chinook and coho will be collected, held and spawned at Three Mile Dam. Spring chinook will be transported to South Fork Walla Walla for holding and spawning. Coho and fall and spring chinook will also be collected throughout the run and at a female to male ratio of 1:1. All broodstock are treated with formalin to help control fungus. It is

anticipated that spring chinook will be injected with Oxytetracycline 100 and Erythromycin 200 at the time of collection and once more prior to spawning. Fall chinook may also recieve one or both injections. That decision will be made in mid-1998 and will be incorporated into the Umatilla Hatchery and Basin Operation Plan. CTUIR and ODFW personnel will spawn the adults and assist ODFW in collecting ovarian and tissue samples to be tested by ODFW Eastern Oregon Pathology Laboratory for the presence of selected pathogens . Whenever possible, a 3 x 3 spawning matrix for summer steelhead will be used, while coho and chinook salmon will be spawned 1:1. Eggs will be water hardened in iodophor and will be transported to Umatilla and possibly other hatcheries. Physical data will be collected as part of the facility monitoring. The critical assumption is that genetic integrity will be maintained.

Objective 4: Snouts and associated biological data will be collected from coded-wire tagged fish at the satellite facilities. In addition, snouts and data will be collected by trap and haul personnel at Three Mile Dam and from Umatilla River surveys conducted by other programs. Snouts will be delivered to ODFW for retrieval and decoding. Umatilla River coded-wire tag recoveries will be expanded based on sampling rates and the information will be reported to Pacific States Marine Fisheries Commission (PSMFC). By accessing and expanding data from PSMFC and other appropriate sources, total survival, contribution to ocean and Columbia River fisheries and escapement to the Umatilla River and other terminal locations will be determined for all coded-wire tagged groups released into the Umatilla Basin. This data is then used to evaluate results of the project and make adaptive management decisions related to the overall program.

Objective 5: In cooperation with the Umatilla Passage Facilities O & M project, maintenance will be performed on all electrical and mechanical equipment, pumps, water supply systems, screens, fencing, fishways, buildings and grounds. Other maintenance will be conducted as necessary.

Objective 6: Will meet with BPA, ODFW, engineers and architectural firms to discuss plans and designs for NEOH facilities scheduled for completion in the Walla Walla River Basin. Input will emphasize facility needs and capabilities to meet production, holding and spawning goals.

Objective 7: An Annual Report summarizing operation and maintenance of the juvenile acclimation/release and adult holding/spawning facilities will be submitted to BPA.

f. Facilities and equipment.

The Bonifer facility consists of a 1.75 acre earthen pond and concrete outlet water control structure which also functions as a fish trap. The pond holds approximatley 4.5 acre-feet of water and is fed by three nearby springs. Flows range from approximatley 750 to 1,850 gpm. Since the facility began operations, water quality has been degraded resulting in heavier weed growth and lower dissolved oxygen levels in the spring and summer which limits periods of use. In addition, siltation has decreased the volume of the pond.

The facility still functions well for juvenile steelhead acclimation and release during the period March to May.

The Minthorn facility is located on Minthorn Springs Creek which is formed from the inflow of several springs. The facility includes two raceways (each 120 x 12 x 4 feet), pump station, standby generator and outlet water control structure which also functions as a fish trap and summer steehead broodstock holding area. Water through the brood holding area is supplied by gravity and ranges from approximately 500 to 2,100 gpm. Water supply to the raceways is pumped from the creek at a rate of approximately 800 gpm per raceway.

The Imeques facility includes a water intake structure with automatic screen cleaner, water headbox/distribution system, storage building, four concrete acclimation ponds (approximately 13,000 cubic feet each) and water outlet and fish release structure. Water is supplied by gravity flow (approximately 1,600 gpm per pond).

The Thornhollow facility includes a water intake structure with automatic screen cleaner, pump station, water headbox/distribution system, storage building, two concrete acclimation ponds (approximately 13,000 cubic feet each) and water outlet and fish release structure. Water is supplied by gravity flow to the pump station where it is pumped into the headbox. Water flow is approximately 1,600 gpm per pond. No emergency life support system exists. A standby generator is needed to operate the water supply pumps as an alterative to releasing fish during emergency conditions.

The Three Mile Dam facility includes a water intake system with automatic screen cleaning, pump station having a pumping capacity of 8,000 gpm, six adult holding ponds (each 90 x 10 x 9 feet), mechanical fish crowder, visitor facilities including restrooms, standby generator, and chemical, bunkhouse and spawning buildings. The bunkhouse includes two bunk rooms, kitchen area, office space, conference room, shop and restrooms. The spawning building includes a fish lift, electroshock anesthesia system, sorting and spawning facilities, wet and dry rooms, walk-in cooler and restroom.

The South Fork Walla Walla facility includes a water intake system with automatic screen cleaning, pump station having a pumping capacity of 18,500 gpm, ozone water treatment system including office, pollution abatement pond, five adult holding ponds (each 90 x 10 x 10 feet), mechanical fish crowder, standby generator, chemical storage and spawning buildings and two homes for nite watch personnel. The spawning building includes a fish lift, electroshock anesthesia system, sorting and spawning facilities, wet and dry rooms, walk-in cooler/freezer, office space and restroom. In addition, there are two computers for monitoring the facility operations.

The project generally has sufficient office, lab and shop space and computers. Additional support vehicles are needed as a result of increased manpower and number of facilities. Other high cost equipment needs include a pressure washer(s), trash pump(s), welder, table saw, drill press, etc. The pressure washer(s) and trash pump(s) are needed because

many jobs occur simultaneously at the different facilities and the number of facilities has increased. The table saw and other equipment is needed to maintain the facilities which have become more numerous and complex.

One additional acclimation and release facility and one hatchery are scheduled for completion in 1998 and 1999, respectively. Designs have not been finalized and additional equipment will be required upon their completion.

The Westland Irrigation District (Umatilla Passage Facilities O & M Program) is also under contract with BPA to assist in heavy maintenance and repair of all satellite facilities.

g. References.

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Lofy, Peter T. and Gerald D. Rowan. 1990. Operation, Maintenance and Evaluation of the Bonifer and Minthorn Springs Juvenile Release and Adult Collection Facilities. Annual Report - 1989. Contract No. DE-B179-84BP17622. Prepared for Bonneville Power Administration, Portland, Oregon.

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Oregon Department of Fish and Wildlife. 1986. A comprehesive Plan for Rehabilitation of Anadromous Fish Stocks in the Umatilla River Basin. Project No. 84-10, Contract No. DE-AI179-84BP18008, Bonneville Power Administration.

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Section 8. Relationships to other projects

This project is part of a comprehensive Umatilla River fish restoration plan developed by CTUIR and ODFW in cooperation with the Council, BPA, NMFS, various Irrigation Distrticts and private landowners. The project helps to increase smolt to adult survival and provide eggs for the program and directly increases survival of salmon and steelhead to the upper Columbia River Basin which is consistent with the Council's Fish and Wildlife Program, U.S. vs. OR Columbia River Fish and Wildlife Plan and the Pacific Salmon Treaty.

The project requires a great deal of cooperation and coordination among many diverse interest groups. CTUIR operates the Umatilla Hatchery satellite facilities in cooperation with ODFW as part of the Umatilla Basin artificial production program. Other facility operations to complete the program include Umatilla, Bonneville, Little White Salmon, Cascade and Carson National Fish hatcheries operated by ODFW and USFWS. Other projects include fish passage and habitat and flow enhancement funded by the Bureau of Reclamation and BPA. The Umatilla Passage Facilities O & M project also assists in preventative and heavy maintenance at all satellite facilities.

Several projects work closely together to monitor population status. In addition to hauling adults and juveniles during low water conditions and providing broodstock for spawning and coded-wire tag recovery information, the Umatilla River Basin Trap and Haul Program provides a comprehensive monitoring opportunity for assessing adult returns to the Umatilla River. The Umatilla Basin Natural Production M & E Program conducts extensive spawning ground and juvenile outmigration surveys to assess natural production.

The Umatilla Hatchery M & E project provides biological information related to the operation of the satellite facilities and evaluates the success of the artificial production program. The Umatilla River WEID/Screens M & E project also provides biological information related to the operaton of the production program.

Section 9. Key personnel

Name: Gerald D. Rowan

Education:

Oregon State University, Corvallis, Oregon, 1972-1974. Graduate work in Department of Fisheries and Wildlife. Major field in fisheries science. Integrated minor. Thesis topic: Effects of Temperature and Ration Size on the Growth of Juvenile Chum Salmon (*Oncorhynchus keta*) in Salt Water.

Oregon State University, Corvallis, Oregon, 1967-1971. Undergraduate work in Department of Fisheries and Wildlife. Major field in fisheries science. Integrated minor.

Work Experience:

1990 to present — Artificial Production Biologist, CTUIR, Pendleton, Oregon. Full-time (12 FTE'S). Responsible for all project activities including development of annual work statements and budgets, writing quarterly and annual reports, purchasing supplies and materials, data collection and summarization, work scheduling, coordination and operation of juvenile acclimation/release and adult holding/spawning facilities, etc.

1978-1989 — Freshwater Facilities Manager, Anadromous Inc., St. Helens, Corvallis and Ft. Creek, Oregon. Responsible for all aspects of managing three freshwater hatcheries including feed and growth programming, vaccination, grading, egg and juvenile and adult transport operations, fish health monitoring and egg and fish treatments, tagging operations, ordering supplies and materials, hiring and firing, adult holding and spawning, incubation, water quality monitoring, etc. Worked with coho, fall and spring

	chinook salmon and atlantic salmon.
1976-1978	Oregon Aqua Foods, Newport, Toledo and Springfield, Oregon. Worked as general fish culturist at Newport and Springfield facilities and as fresh water hatchery manager at Toledo facility. Duties as fresh water manager included all aspects of managing a freshwater hatchery. Worked with rainbow trout, chum, pink, coho and chinook salmon.
1975	Aquaculturist, Sand Point Aquaculture Program, Sand Point, Alaska. Responsible for overall development of fish culture program at a small high school. Taught course in fish husbandry, built and operated a small demonstration hatchery and assisted in initial development of fish culture curriculum for state school system.
Pulications:	Have co-written 1 annual project report and have written 7 anual reports.

Section 10. Information/technology transfer

Coded-wire tag recovery information for all Umatilla River release groups is reported to Pacific States Marine Fisheries Commission and is incorporated into their data bank. In addition, data collected by this project is shared with other Umatilla Basin programs and is analyzed by CTUIR and ODFW managers and researchers. Based on information provided, adaptive management decisions are made each year by basin co-managers. These decisions are incorporated into the Umatilla Hatchery and Basin Annual Operation Plan.

The information is also summarized in quarterly reports and an annual report to BPA. Annual reports are available for each year since project inception. In addition, the satellite facilities are highly visible and open to the public. Information is dispersed to the public through private and public tours.